REMARKS

New paragraph [0054] has been added to place in the specification certain information concerning the allocated frequencies and know polarizations of SDARS and commercial AM and FM radio signals so as to provide clearer examples of such terms such as SDARS antenna, SDARS receiver, AM/FM antenna and AM/FM receiver. This information was publicly known at the time of the filing of this application and does not result in the introduction of new matter in this amendment. It is also used in applicants' discussion below to deepen the reader's understanding of applicants' amended claims in the context of the cited prior art.

Applicants present herein a new independent claim 28 and amended claims 4 – 7, 9 – 16 and 18 – 20 dependent thereon. The latter claims stand rejected on the ground of non-statutory, obviousness-type double patenting over various claims of US 6806838 to Petros et al and also under 35 USC 103 as obvious over CA 2305860A1 of Kielland. But applicants believe they have invented an antenna system that is distinct and improved over the systems of these prior art references; and they have amended their claims to more particularly point out and distinctly claim their invention.

Satellite Digital Audio Radio uses satellites to transmit SDARS signals in a predetermined frequency band with left-hand circular polarization. These signals are received by consumer-owned receivers having antennas designed for the reception of SDARS signals; but this reception at ground level can be blocked by large obstructions such as tall buildings in urban areas. Thus, the SDARS providers provide terrestrial repeaters in urban areas that receive the signals and retransmit them with linear, vertical polarization. The Petros et al reference teaches an SDARS and AM/FM antenna system that takes advantage of a common mounting of an SDARS antenna and an AM/FM antenna to receive the terrestrial retransmitted satellite signals on the linear, vertically polarized

AM/FM antenna, since commercial AM and FM radio stations likewise broadcast their signals with linear, vertical polarization and the AM/FM antenna is thus designed to efficiently receive signals with vertical polarization.

But the retransmitted SDARS signals, although vertically polarized, are broadcast in the same SDARS frequency band as that of the satellite transmitted SDARS signals; and this 2.3GHz frequency band corresponds to a wavelength that is approximately 20 times smaller than that of commercial FM broadcasting (88 – 108 MHz). Applicants discovered that, in spite of the common vertical polarization, it was more difficult than originally thought to design an antenna to efficiently receive the SDARS signals on an antenna (typically monopole or folded dipole of about one meter length) designed for commercial FM reception. Thus, their SDARS antenna is used to receive both the directly transmitted, circularly polarized SDARS signals and the terrestrially retransmitted, vertically polarized signals and provide both of these signals directly to the SDARS receiver through a single SDARS/SAT/TER cable while receiving the AM/FM signals on the AM/FM antenna and conducting them to the AM/FM receiver on a single, separate AM/FM cable. In additional to the benefit of improved reception of terrestrially retransmitted SDARS signals, applicants' system also saves the cost of the extra circuitry and cable needed in the Petros et al system to combine and then separate the AM/FM and retransmitted SDARS signals and reduces the degradation of the AM/FM signals produced by that equipment; although the cost savings are secondary to the superior received quality of the SDARS and AM/FM signals.

Applicants believe that it was not known and also was not obvious to one of ordinary skill in the art at the time of their invention to provide commonly mounted SDARS and AM/FM antennas with separate cable connections to SDARS and AM/FM receivers by two cables in which the AM/FM antenna receives vertically polarized AM/FM signals and provides those to an AM/FM receiver over a first cable, and the commonly mounted, circularly

polarized SDARS antenna receives both the circularly polarized and vertically polarized SDARS signals and provides all SDARS signals to the SDARS receiver over a second, separate cable.

With respect to Examiner's non-statutory, obviousness-type double patenting rejection, applicants believe that their new claim 28 renders a double patenting rejection moot. In some respects, applicants' claim is somewhat narrower than claim 23 of Petros et al: an "SDARS antenna" vs. a "satellite antenna" and an "AM/FM antenna" rather than a "terrestrial antenna." But claim 23 of Petros et al contains significant elements not claimed by applicants: (1) the "first cable" connecting the AM/FM receiver to the satellite receiver, (2) one of the "third cable" and the "fourth cable" (take your pick). Examiner should also note carefully the wording of the cable connections in each claim. Applicants, for example, recite "...an SDARS receiver coupled to the SDARS antenna by an SDARS/SAT/TER cable...." , whereas Petros et al recites "...the mounting assembly connected to the satellite receiver by a third cable and a fourth cable...." Applicants recite a receiver coupled through a cable to an antenna; and this defines a signal path from a specific antenna to a specific receiver. In contrast, Petros et al recite a receiver connected through two cables to a mounting assembly. Since Petros et al recite the terrestrial antenna only as being "mounted on" the mounting assembly and the satellite antenna only as being "mounted concentrically with respect to" the terrestrial antenna and recites nothing with respect to their electrical connections, no signal path from an antenna to a receiver is defined in the claim. These recitations of the claims are thus fundamentally different on this level, regardless of the number of cables used. In addition, various other elements of the Petros et al claims are no longer in applicants' new independent claim 28: namely the bezel and low noise amplifier (and the bezel does not appear in any of applicants' claims). Thus, applicants believe that there are too many differences between the claims of the

two patents; and the double patenting rejection should be withdrawn, with future examination on the basis of prior art teachings.

Applicants' claims also stand rejected under 35 USC 103(a) as obvious over Kielland, by itself. Kielland shows a global positioning system (GPS) antenna combined and commonly mounted with an AM/FM antenna. Kielland provides the GPS signals directly and exclusively to the GPS receiver and the AM/FM signals directly and exclusively to the AM/FM receiver. But Kielland is dealing with a GPS system, which does not use terrestrial retransmission of its signals with vertical polarization. Thus, the Kielland disclosure, although it teaches a commonly mounted GPS and AM/FM antenna system, shows no knowledge of the problem solved by applicants' invention, much less the solution. Examiner states that Kielland's antenna will pick up satellite signals regardless of whether their source is a satellite or a terrestrial repeater. This would be true if the signals are identical; but in the case of applicants commonly mounted SDARS antenna and AM/FM antenna, they are not. The statement is not conclusive of the issue of obviousness when the receiving antenna is circularly polarized to receive circularly polarized signals from the satellite directly but the terrestrially retransmitted signals are vertically polarized. In addition, Kielland's GPS antenna will not necessarily respond similarly to applicants' SDARS antenna, since the systems use different frequency bands and produce different signals with different modulations, etc. Antennas, whose performance is subject to specific boundary conditions of the EM wave equations, are notoriously unpredictable when applied in different frequency bands. Applicants have limited their claims to SDARS radio systems which transmit in the 2.3 GHz band, while GPS systems transmit in the 1.5 GHz band. This latter band, although still high in frequency, is closer to that of the AM/FM band. What evidence does Examiner present that applicants' discovery for the SDARS system would also be true in the 1.5 GHz band?

Examiner is reminded that the Petros et al reference is directly on point as a combined, commonly mounted SDARS and AM/FM system in which the SDARS antenna is designed for the same kind of system in the same 2.3 GHz frequency band as applicants'; but it teaches that the vertically polarized SDARS signals should be received along with the vertically polarized AM/FM antenna, in spite of the extra cost and FM signal degradation resulting from that arrangement. Applicants find this to be a very strong case for the lack of obviousness in their claimed invention and finds the teachings of Kielland, which apply to different signals used for a different purpose in a substantially different frequency band and do not include any vertically polarized signals, to be almost irrelevant in comparison. Applicants' discovery of the disadvantages of receiving the vertically polarized, terrestrially retransmitted SDARS signals through the AM/FM antenna, in spite of the AM/FM antenna's matching vertical polarization and its handy co-location in a commonly mounted antenna system led them to invent a new, commonly mounted SDARS and AM/FM antenna system in which each antenna provides a receiving source for signals in its own frequency bands, regardless of signal polarization; and this is not taught by or obvious in view of Examiner's cited prior art.

Applicants thus assert that their amended claims are not obvious under 35 USC 103(a) in view of either Kielland or Petros et al by themselves or together; and they assert that, to the best of their knowledge, their claims are in condition for allowance.

Please charge any deficiencies and credit any overpayment to Deposit Account No. 50-0831.

Respectfully submitted,

Robert M. Sigler
Attorney - Reg. No. 26,505
(248) 813-1245